TUBERCULOSIS OF THE FEMALE GENITAL ORGANS (INCLUDING TUBERCULOSIS OF THE KIDNEY).

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Mr. President and Fellows: The study given to the department of surgery in the past decade has, in a most remarkable manner, helped to the better understanding of the subject assigned to me in this discussion. Those of us who, for many years, were guided in our pathological studies by Rokitansky, Virchow, Lebert, and others have a keen recollection of how silent they were regarding tuberculosis of the female genital organs, although it is to be remembered that previous to 1854 Kiwisch had given a very accurate description of such conditions. It was not until we had reports from such earnest workers as Whitridge Williams, Osler, and Councilman, of Baltimore, and other American writers, together with a host of German investigators, that we were able to recognize, to demonstrate, and to comprehend that such cases were to be met with, and that a clear line of treatment was to be carried out. Even at the present time, with few exceptions, it is not from our modern text-books that we receive our greatest knowledge and instruction in the recognition, classification, and treatment of this subject. Even now some authors look upon tuberculosis of the external organs as museum curiosities, and not to be taken into careful consideration in the classification of diseases that are known to occur among these anatomical structures. It is somewhat startling to note in the careful investigations made by some of the writers to whom I have just referred that, although tuberculosis of the vulva, the vagina, and of the

cervix is yet exceedingly rare, still these cases have a clinical history to be recognized by differential diagnosis, so that when we consider the uterus and its appendages we come into such a frequency of this pathological condition as to bring us a much larger percentage of general tuberculosis than has been generally supposed. The statements of Rokitansky, Virchow, Councilman, and others no longer hold good that tuberculosis of the ovaries, and, as mentioned in some of their writings, including the tubes, is exceedingly rare, for this has proven to be a fallacy, especially regarding the latter.

Again, we are brought to the point of comfort that has come to us within a few years, *i. e.*, the result of our careful pathological and histological work, and bacteriological investigation, and the infallibility of our diagnosis, when the crucial examination is made as to tubercle bacilli being present. We have here, it seems to me, the key of the arch of the structure in our pathological studies that gives us something positive, and that we are no longer to rely upon the macroscopical appearances as to the possibility of this and that case being a suspected one of struma, or tuberculosis; or that the cheesy material present in the tubes, cornu of the uterus, possibly the ovaries, is a doubtful condition, but rather, by careful histological and bacteriological investigation, finding the tubercle bacilli, we realize the grand progress that has been made in the advanced methods of pathological research. When we have such careful observers as Edebohls giving us a percentage of four, Martin a percentage of three, Williams, of Johns Hopkins, a percentage of eight, as the result of their investigations in the operating theatre of general tuberculosis, and of the appendages removed for inflammatory disease, we cannot but realize that the subject is one that has been thoroughly studied, and that there was an uncultivated field, a field that had been sadly neglected. With such a classification of cases we now have much reason to be grateful, and can advance upon a higher plane, working in a more intelligent atmosphere of certainty as to just what our patients are suffering from.

When all modern writers in this country find in their post-

mortem investigations, and in operated cases examined by them, that there is from one to eight and ten per cent. of tuberculous disease present in the female pelvic organs, it is certainly an impressive presentation of the subject. We find that it is a condition that has no limit as to months or years of life. General tuberculosis has been recognized at as early a period as ten weeks, but the greater number of cases have been between the ages of twenty and forty, and it is believed that it prevails to a larger extent during the latter period of sexual activity.

As stated by Williams, he has observed cases as late as eighty-three years of age, and John D. Williams, of England, has reported cases at the ages of thirty-six and sixty-three years, respectively; while in this country we have had such conditions described by Homans, Goodell, Cabot, Morrell, Bradford, Mundé, Kelly, myself, and others, in quite a good many instances, at all ages.

In the study of the subject, general tuberculosis is to be noted at the age of ten years, as I have observed in one of my cases, the same as in extreme age; and, again, secondary infection is to be seen when the condition is not strictly a local or primary development. Further, in the study of this disease, as it presents in the external organs of generation, we must ever take into careful consideration in the clinical history the possibility of specific disease—syphilis in some form, then, as to the possibility of malignancy being a factor, the time of life, etc., and finally an ulcer presenting that does not give the characteristics of either one of these lesions, we have the sure test and best aid in the use of the microscope.

It is not possible to have the clinical history as clear as we have in other forms of disease, but we have this as a warning, *i. e.*, if the patient is from a family possessing a tubercular diathesis, we should be thoroughly on our guard as to the possibility of this local lesion being of that nature. Therefore, we no longer have excuses, and must take into consideration, in a certain percentage of our cases, the possibility of tuberculosis being present in the ulcerative conditions that present in the external organs of generation. We must not lose sight of the

fact that cases of lupus of the vulva have been described which were really tubercular ulceration in the advanced stage of pulmonary tuberculosis.

That the disease is exceedingly rare as regards the external structures—and especially so of the vagina and cervix—there can be no doubt; that cases of tuberculosis of the uterus are not by any means infrequent is equally true, in a certain number of cases, and not associated with general tuberculosis of the system. It may be said in regard to tuberculosis of the uterus, that in the majority of cases it is limited to the mucous membrane.

It is here that we have also made a grand advance in the procuring of the leucorrhœal discharge, or of specimens, either by curetting or section, for microscopical study.

When we come to the study of tuberculosis of the tubes and ovaries the clinical history is not, by any means, as clear as we could wish—cases are greatly obscured.

The gonorrhœal infection, known to be present in so many of these cases, is sometimes grafted upon a mass of what is really but a true condition of tubercular infection. The cases of pelvic peritonitis, ushered in by any one of the etiological factors that present in this condition, also make, to a certain extent, the true tubercular condition that is found when an operation is called for and performed.

The extreme rarity with which we have true tuberculosis of the ovaries, yet found at times and associated with some condition of the tubes, and of the general peritoneum, is also an obscure state that blinds us frequently in our study of the clinical history. Even at the present time we read of cases in which an operation has been suggested for relief of a supposed ovarian cyst, or possibly of general dropsy, or of presumed pyosalpinx, or hydrosalpinx, and yet when done told plainly that it was a case of tubercular trouble.

The etiology of tuberculosis of the female genital organs is a subject for further and careful study. That it is, at times, a local manifestation of the condition of the system there can be no doubt. That it is, at times, but a local condition due to the

planting of the tubercle bacilli there, either through the direct communication of soiled fingers or instruments, is equally true, and, as stated by Barbier, a woman can be infected by a tubercular husband during coitus, as bacilli have been found in the semen of tubercular patients, as well as in the discharge attending tubercular epididymitis.

That the disease originates more frequently in the tubes themselves, as a local disease, or in connection with general tuberculosis of the system, and then infects the uterus, also the cervix, is the strong point to be observed in the study of these lesions.

Therefore, one cannot overlook the fact that the uterus occupies a point of attack from without as well as from within, and that we can now clearly understand why some of our old cases, previously called catarrhal disease of the body of the uterus, were clearly a condition of tubercular endometritis, the true diagnosis now being made by examination of material secured in simple curettement.

Unquestionably laceration of the cervix, repeated abortions, renewed and continued attacks of pelvic peritonitis, gonorrhœal infection, traumatisms, a constant and continued overloading and constipated state of the rectum, and a persistent leucorrhœal discharge, are all etiological factors in the study of this subject.

The symptoms and diagnosis are to be, undoubtedly, classified still on the basis of exclusion. When a patient presents with local irritation, which she has observed in the form of a slightly hardened mass, sometimes described like that of a split pea, located about the vulva, found at some point about the anterior or posterior fourchette, or opening of the vaginal outlet, found within the walls of the vagina, perhaps located as a distinct grayish-looking ulcer about the lacerated cervix, an elongated posterior lip with inflammatory tissue, possibly a profuse leucorrhœal discharge, in many instances not irritating, yet so great in amount as to be distressing, possibly now and then tinged with blood, we should not delay in looking for tubercle bacilli.

When a serous bloody discharge is persistent we should

carefully consider the element of malignancy, especially if the odor is very pronounced.

Whenever the labia becomes the seat of local tuberculosis, the moisture and warmth of the parts favor early necrosis, but the odor is believed to be less unpleasant. The edges of the resulting ulcer are thin, purple, undermined, the base irregular, secreting a scanty, thin, puriform discharge. One point is at times healed, while the ulcer is spreading in another direction. Extension and destruction of tissues vary greatly. There may occur hemorrhage from erosion of bloodvessels. It is apt to occur more frequently in young people, accompanied by tuberculosis of other parts of the body, and will recur at times after apparent healing.

"Differentiation is not always easy as between epithelioma and syphilitic ulceration, but may usually be based upon the following points: 1. Age of patient; tuberculosis more frequent in early life, and epithelioma in later life. 2. The history; antecedent syphilis; tuberculosis in other parts of body. 3. Appearance of ulcer; more abundant, fetid secretions from epithelioma. 4. Effect of treatment. 5. Bacteriological tests."

When we have present these local conditions, then an immediate examination of a portion of the diseased tissue that can readily be removed, even from the vulva, from the vaginal walls, from the cervix or uterus, more easily by curetting, or from specimens of the leucorrhœal discharge itself, should be made, and a careful microscopical search assists us at once in the diagnosis of the case.

The general condition of the patient should be closely observed as to whether there is tubercular trouble elsewhere about her system. If this latter condition is present, then she should have the immediate benefit of constitutional treatment, such as plenty of fresh air, sunshine, relief from all nerve-strain, the very best of diet, tonics in some form, such as iron, arsenic, and the use of beechwood creosote, the latter of which the writer is much in favor of.

When we are able to exclude all the external parts, and we find that the disease is confined mostly to the cervix, we must

remember that the error has not infrequently been made of vaginal extirpation being performed for what was supposed to be carcinoma, but in reality proved to be simple tuberculosis; therefore, it is our duty in all cases in which there may be the least possibility of doubt as to its being one of carcinoma or of tuberculosis, to make microscopical examination as early as possible.

Tuberculosis of the cervix, whether primary or secondary, tends to limit itself to that structure, being in the first instance frequently the only tubercular lesion in the whole of the generative tract. In these observations we find the most important bearing upon the theory of causation. In this we are led to the belief that the etiological factors must embrace something besides the theory of infection from tuberculous discharge higher up in the passages of the peritoneal cavity. The latter cause is sufficiently plausible and plain in some instances; but where the disease is confined entirely to the cervix, one must look for infection through the blood or directly from without for the real cause. Direct infection may occur, as previously stated, from unclean instruments, soiled fingers, or from coitus. The latter danger is emphatically contradicted by some authorities from their comparison of the rarity of the disease in the cervix and vagina as found in the uterus and tubes. That this is a fallacy one can readily establish, when we reason from the analogy of the infrequency with which the disease is communicated from without through the agency of the mouth.

This is a fact: that the disease when found about the vagina, in the vast majority of cases, is to be noted more particularly upon the posterior walls and upward toward Douglas's *cul-de-sac*. This is probably due to the stagnation of infecting material, either from the uterus or from without the genital tract. We must bear in mind that it is possible for the vagina to become infected by tubercular ulceration of the rectum. Tuberculosis of the vagina is sometimes the cause of fistulous tracts leading to the bladder, urethra, or the rectum, and these fistulæ are exceedingly difficult of cure. The writer has seen cases of fistula

extending up through the labia, upward into the buttocks, and becoming complicated with ischio-rectal abscesses.

Miliary tuberculosis, as well as the caseous form of general tuberculosis, presents much in the same way, the microscopical examination showing the bacillus tubercle.

It is interesting to observe that experiments upon rabbits have shown that bacilli introduced into the vagina, that organ having previously been irritated by the application of iodine, did not produce genital, but general tuberculosis.

When the cervix is apparently not implicated, when we know from the condition of the patient as to the constant, continued discharge from the cavity of the uterus, when we have an enlarged organ, when we have symptoms of lasting anæmia to a certain extent, the absence of evidence of placental retention within the uterus, or of polypi, or interstitial growths, we should lose no time in procuring some of the uterine discharge for microscopical examination. The curette aids us in making the diagnosis of tubercular endometritis, cases often being cured under this thorough line of treatment. If the case be one in which the uterine walls are implicated, entire removal may be required, and is a justifiable operation at times.

It is in the study of the tubes and ovaries that we find our greatest obscurity. It has been well stated that, "in the absence of tubercular lesions of the vulva, vagina, and uterus, it is doubtful if infection of the Fallopian tubes can take place by the entrance of the bacilli through the genital tract, and the relatively frequent occurrence of the disease in that part of the genital organs is only explainable by attributing it to autoinfection in the same way as we have explained the occurrence, for instance, of primary tuberculosis of joints and peritoneum. We can only safely assume that tubercular infection of the tube often, if not always, takes place upon the basis of pre-existing pathological conditions, taking it for granted that the healthy tubes do not present favorable conditions for the localization of the tubercle bacilli. A catarrhal condition of the lining membrane of the tubes, as in other organs, undoubtedly acts, in

many instances, as a predisposing cause to localization of pre-existing micro-organisms in the circulation." (Senn.)

Beyond question a large proportion of tuberculosis of the Fallopian tubes occurs primarily, but, as has been well observed, it may occur secondarily. Uterine infection is frequently associated with pelvic peritonitis, and is a condition present in diseases of the lungs and of the intestines. Ulceration may progress to suppuration of the tube, and, as has been observed by all of us, the latter is much thickened, associated with fibroid induration; the tube distended, coiled upon itself, and even having the appearance of pyosalpinx, but is really of a tubercular character. In some cases the appearance of pus is supplanted by the cheesy, calcified material of the tubercular change, and in these cases the uterus becomes infected secondarily.

Garrigues has well said that "the wall is swollen, its epithelium is thrown off, the ostia are generally closed, the calibre is enlarged, and the tube is filled with a caseous mass. The microscope reveals the characteristic formation of tubercles in the wall—nuclei centring around giant cells—and the presence of Koch's bacillus in the tissue and in the secretion. Often the peritoneum in the vicinity is studded with miliary tubercles. In advanced cases the whole mucous membrane is destroyed. The tubes are, in general, out of place, often drawn down along the edges of the uterus and bound to neighboring parts by adhesions. They may form tumors as large as a goose-egg, the shape of which is that of a sausage, a club, or, most frequently, a string of three to five beads, the single knobs of which are round or oval and hard, while in pyosalpinx they are soft."

It is a well-known fact that in the few cases met with of infection of the vagina, the majority really were the result of the secretion passing down through the uterus, probably infecting the latter, and then the vagina more or less. Tubercular peritonitis may, in like manner, infect the vagina without any impression being made upon the tubes and ovaries.

Tuberculosis of the tubes is not, by any means, as uncommon a disease as is generally supposed.

The few cases in which it is met with primarily have been

attributed to the direct infection, by having the semen of a tubercular man pass directly into the genital tract. This man may have been suffering not only from pulmonary tuberculosis, but from a tubercular testicle. Tuberculosis of the tubes may be, and is at times, a secondary disease, having appeared in other parts of the body, usually in the form of tubercular peritonitis.

In the study of the symptoms and diagnosis of tuberculosis of the tubes and peritoneum without ascites, Edebohls has made the following excellent observations: "The diagnosis of tubercular peritonitis, in the absence of ascites, is based mainly upon the detection of localized, irregular thickenings—tubercular tumors—in various parts of the abdominal cavity. These tumors are caused by thickened, rolled-up omentum, agglutinated intestines, enlarged mesenteric glands, etc. Their existence presupposes a tolerably well-advanced stage of the disease, and they are consequently rarely available for an early diagnosis. The writer desires to call especial attention to one sign which has proved to him of the greatest value in the early diagnosis of peritoneal tuberculosis without ascites, and which he has thus far failed to find mentioned by any author. It has been the sign which has led him to a correct diagnosis in all the early cases in which he has been able to make a positive diagnosis before laparotomy. It consists in plaque-like localized thickenings of the deeper portion of the abdominal parieties, perceptible to gentle touch. They impart to the palpating fingers the sensation as if the peritoneal surface of the abdominal walls were occupied by urticaria wheals or pomphi of various sizes. The author has met them from one up to eight centimetres in diameter. They may be quite numerous in a given case, or but two or three may be found scattered over the anterior and lateral walls of the abdominal cavity. By marking their site before laparotomy and carefully examining during the performance of the operation the structures underlying the marks, the writer has satisfied himself that this sign—the plaque-like localized thickenings—depends for its existence upon a localized hyperæmia and swelling of the tissues of the abdominal wall

immediately underlying the peritoneum, *i. e.*, of the subperitoneal connective tissue. The peritoneum was frequently found unchanged, and not the seat of tubercular deposit at the precise spot where the induration had been felt. Indeed, the sign may be especially well-marked in cases where the peritoneal tuberculosis is in its very incipiency, a few solitary tubercles being found scattered here and there in the peritoneal sac. When the tubercular peritonitis has led to universal and uniform thickening of the entire peritoneum, the sign becomes less available for diagnosis. I consider it, therefore, of especial value in the diagnosis of the very early stages of peritoneal tuberculosis, and when it can be plainly made out in parts of the abdominal walls not overlying a solid viscus, I regard it as almost, if not quite, pathognomonic. The only other disease in which, to my mind, it might occur, is disseminated secondary carcinoma of the peritoneum. Inasmuch, however, as in the latter instance it could occur only toward the end of the disease, while in peritoneal tuberculosis it is an early manifestation, the differential diagnosis ought rarely to present any difficulty. Our knowledge of the differential diagnosis of tubal tuberculosis from other diseases of the tubes leading to enlargement is as yet very meagre."

Osler offers us more valuable aid in the following sentence: "The association of a tubal tumor with an ill-defined anomalous mass (tubercular tumor) in the abdominal cavity should arouse suspicion at once."

Edebohls is inclined to go a step further and submits the following proposition: "The coexistence of tubal tumor or tumors with plaque-like thickenings of the subperitoneal tissues, above described, points with great positiveness to tuberculosis. The tuberculosis, under these conditions, may fairly be assumed to be primary in the tube or tubes, if no other deep-seated tumor can be palpated in the abdominal cavity. Exploratory puncture of the tubal tumor may, in exceptional instances, make positive the diagnosis of tubal tuberculosis."

It is to be noted that in the removal of tubercular Fallopian tubes, frequently on cutting them across they do not exude pus,

but a caseous condition is observed. Again, the uterus is found free, the closed end of the tube indicating that the disease had not originated from the peritoneum, but clearly in the tubes themselves.

It has been observed that it was very rare to find tuberculosis of the tubes alone in women who had been married for some years and who had borne children.

Careful observations have shown that tubercular disease is confined mostly to the tube itself, occurring among the young and unmarried, and the following case bears out the theory nicely: Miss J. K., aged fifteen years, single, a student. Family history somewhat in the direction of tuberculosis. Menstruated at thirteen; regular for one year, then profuse at times and somewhat painful. Patient now began to emaciate, and was treated for more than a year by a specialist, in his sanitarium, with hot-water douches, application of glycerin tampons, iodine, etc., without any very marked improvement. When she came under my observation there was bilateral enlargement of the tubes, the uterus somewhat fixed, patient greatly emaciated, and suffering, as I believed, from tubercular peritonitis. No abdominal fluid. On section the tubes were found greatly enlarged and distended; ovaries apparently healthy, but removed with the tubes. The latter on examination were found to be tuberculous in character. This patient made a most excellent recovery, and two years afterward her friends wrote me that she had remained in perfect health.

Here the disease was confined entirely to the tubes, the ovaries and peritoneum having escaped. As stated, this case is confirmatory of the point in regard to the disease occurring among young, unmarried women.

It is true that we do not find the ovaries implicated in many of these cases, and that the fimbriated end of the Fallopian tubes becomes closed, a wise protection on the part of Nature, it would seem, of the peritoneum from infection.

In many of the cases of tubercular appendages it is really a local manifestation due to some etiological factor, to which we have referred, or as a proof of the tubercular blood or constitu-

tion of which the patient is possessed; therefore, when we have a patient who suffers from pelvic disease, and all conditions, such as tumors, pelvic abscesses, etc., are to be excluded, and we have present the constitutional symptoms, such as temperature, increase of pulse-rate, a hectic and anæmic appearance, all pointing to some obscure condition of the uterine appendages, we do not usually go astray in a direct exploration, and it is not surprising that we find a large number of these cases to be of the character of local or possibly general tuberculosis.

Beyond a doubt tuberculosis of the ovaries is much rarer than tuberculosis of the uterus and tubes, and it is fair to infer that when infection takes place it is through the circulation more particularly. The ovary when in a condition of miliary tuberculosis will present many raised points the size of millet-seed. When caseous tuberculosis exists the ovary will enlarge to the size of a large marble or hen's egg. Acute peritonitis and tubercular peritonitis are sometimes caused by these tubercular nodules softening and rupturing into the peritoneal cavity. In tuberculosis of the ovaries miliary tubercles are the exception.

There are two chief forms of tubercular ovarian disease described: The first, minute miliary granulations on the surface of the organ; and the second, usually caseous masses. The latter may assume the size and shape of a small apple, dense on section, and containing numerous small cysts filled with viscid fluid. Such cases present little or no normal ovarian stroma. Either form, as here described, may be grafted upon papillomatous tumors, or other diseased conditions of the ovary.

It is very difficult to make the diagnosis between tuberculosis of the ovaries and chronic oöphoritis. When it is possible to make the former diagnosis the ovaries should be removed as promptly as possible.

Ovarian cysts are sometimes studded with subperitoneal tubercles, as has been observed by a number of writers, yet removal of the cyst seems to relieve any sympathetic involvement.

Symptoms. The primary sore, whether connected with the vulva or vaginal wall, will present at times a distinct ulcer, the

margins of which are decidedly thickened and occasionally indurated, so as to give one the impression of a syphilitic sore.

I call to mind an exceedingly sad case occurring in my own practice, an advanced case of phthisis, in which the local sore about the vulva gave rise to a very strong suspicion that she had contracted syphilis. The party was above all possible suspicion, but a careless remark on the part of the medical attendant caused much heart-burning and distress in the family relations. Had I then known and made an examination for tubercle bacilli, I am sure it would have demonstrated that the case was one of infection from general tuberculosis of the system.

The macroscopical search will often present the appearance of a cheesy-like substance attached to the floor of the ulcer, but when a careful examination of the secretion is made the tubercle bacilli will be found.

I have seen a well-marked case of tuberculosis of the walls of the vagina in which the latter was studded with little elevations appearing very much like a split pea, white in appearance, containing caseous material, strictly tubercular in character, the patient having a family history of tuberculosis. This patient progressed nicely to complete recovery under local treatment.

In the study of symptoms one should be exceedingly cautious as to the classification of all symptoms, and not confound one diseased organ with another, the following case being a striking illustration:

Mrs. H. S., aged twenty-six years; two years married; husband said to have had specific urethritis one year previous to marriage. Within a few months after marriage she developed a urethritis and cystitis, and it was supposed that she was suffering from salpingitis due to gonorrhœal poisoning. She was treated in a special sanitarium for uterine troubles; bladder washed out once or twice in twenty-four hours for a period of six months, local applications made to the cervix; vaginal douches in large quantities employed, but no improvement resulted, and patient emaciated constantly. When seen by me, October 1893, I found a double pyosalpinx, as I believed, and

advised immediate operation, which was done a few days afterward. This was found to be a case of tubercular tube trouble. The patient made a good recovery from the operation, but on the twenty-second day symptoms of intestinal obstruction presented, which resulted in death five days later.

This case bears out the observation made previously that we may have grafted upon tubercular tubes a pyosalpinx due possibly to specific infection.

In the diagnosis and treatment of tubercular disease we should always take into consideration the constitutional tendency toward tuberculosis, and, if it exists to any great extent in that particular family, we should be cautious as to how long we continue hot-water douches and hot applications, but do that which is so important in these cases, *i. e.*, an early exploration and operation for removal of what may be present in the way of diseased tissue.

Many of the symptoms associated with this subject have been touched upon in various portions of this paper, therefore it does not seem necessary to go into details too closely.

In the review of the treatment the author desires to report his own experience and add the observations made by others in their clinical work more especially.

Though there may be evidence of pulmonary disturbance, yet it is in the cases of local ulceration that present about the vulva, about the walls of the vagina, and of the cervix, that the most gratifying results follow from the careful, thorough use of the thermocautery in some instances, of ichthyol, iodine, aristol, and careful curetting, complete extirpation of inflammatory areas of implicated tissue, the removal of diseased glands, repair of the lacerated cervix, the free lancing and leeching of vesicles that may present at different points, and packing with iodoform-gauze. I believe that in all cases of tubercular endometritis thorough curetting should be employed, the wiping out of the cavity of the uterus with carbolic acid, the use of the peroxide of hydrogen, and that careful packing by means of strips of iodoform-gauze is a procedure that should be tried exhaustively. This failing, then the total extirpation of the

uterus becomes necessary, and in no case of tuberculosis of the body of the uterus should the ovaries be left behind.

Clearly in cases of tubercular disease of the tubes and ovaries there is but one course of treatment left for the attendant, and that is complete and thorough removal by operative interference. When this is once decided upon these tissues may be reached through the vagina, or the route left to the inclination of the operator himself, the writer of this paper preferring cœliotomy, and has every reason to feel gratified with his results.

Tuberculosis of the Kidney. Those of us who had the opportunity of attending and listening to the remarkable lectures of the late Alonzo Clark on the subject of the scrofulous kidney, or tubercular kidney, as he sometimes described it, will recall with what minute care he always endeavored to impress upon the students the differential diagnosis between this form of struma and that of the other diseases peculiar to the kidneys, his views to a certain extent holding good even at the present day. It does not take a very deep searching between the lines to note that the classification observed in the very latest works upon this subject carries out the impressions of this famous lecturer. So much has been written, so many text-books published within a short time of a surgical character, that it seems quite difficult for one to be able to present anything particularly new or positively impressive to the class of men supposed to listen to this portion of my paper, but it may safely be said that tuberculosis of the kidneys is classified under two forms, *i. e.*, the miliary or general tuberculosis, and the caseous, scrofulous, or true tubercular disease of the kidneys. The two conditions are capable of developing separately, and present a train of symptoms peculiar to themselves.

Tubercular kidney in itself, so far as its etiology and symptoms are concerned, is a very difficult lesion to diagnose. It is far more difficult, and not at all so sure after much labor, to find tubercular bacilli in the secretions of the kidney, even when in this diseased condition, and it is here we fail in making use of that crucical test that is of so much value in the diagnosis of tubercular lesions elsewhere about the system. The patients

who present with a tubercular kidney give a history of being sick, yet when you analyze their description of symptoms carefully and closely you find that it is very difficult to make out a case of even renal colic, renal sand, renal catarrh, even of malignant disease, of pyelitis, of pyonephrosis or hydronephrosis, all these conditions being excluded for want of well-known symptoms.

The real history of the case leads to a group or lot of symptoms such as pain in the lumbar region, a sense of weight and dragging about the side affected, extending downward into the inguinal region, accompanied, perhaps, with some nausea, with loss of appetite, at times some emaciation, a languid, restless feeling, not suffering the acute pain that accompanies most of the other lesions of the kidneys; but the patient is not well.

Under this head of symptoms there is some distinct difference between miliary tuberculosis and the true scrofulous kidney, or chronic renal tuberculosis, the scrofulous pyelitis of Clark, or scrofulous pyonephrosis of later authors. Miliary tuberculosis is usually accompanied with the development of this disease in other parts of the body, and by the very best writers it has been said that it is almost impossible to make a positive diagnosis of its appearance. Miliary tuberculosis is essentially the disease of childhood and adolescence, in children occurring more frequently up to about the tenth year of age. While it is not what may be called a primary disease, still in its development about the kidney the little millet-seed granulations are to be found through the cortical substance in close association with the minute bloodvessels, the deposits encroaching gradually upon the connective and vascular tissues into the uriniferous tubules along the pyramids, and gradually into the mucous and submucous tissues of the renal pelvis and ureter, extending down to the genito-urinary tract, in both the male and female, in this way.

"Donnadieu has endeavored to determine whether the tubercular lesions of the urinary tract are manifestations of an ascending or descending process. Pathological anatomists tend to view the lesion as generally a secondary one in one or other

kidney, extending thence downward along the ureter to the bladder, a mode of occurrence which the writer is disposed to accept in connection with acute general tubercular processes. But in the common, cheesy, surgical tubercular lesions the majority of clinicians tend to the idea that there occurs, as a rule, a primary tubercular focus in the lower urinary or genital structures, which gradually extends upward along the mucous surfaces to the bladder and ureter to the kidney. It is to be noted that in these cases there is rarely any chance of estimating the relative age of the lesion in different parts attacked, the process being rarely met in the stage of the gray tubercle, but usually in the form of cheesy masses, or as ulcerations representing the excavations in the mucous membrane due to the removal of such cheesy material." (*Sajous's Annual*, 1894, vol. i.)

This is quite different from the chronic renal tuberculosis. Careful study of these latter cases leads one to believe that it is more a disease of middle age and advanced life, than of childhood. Undoubtedly there are some cases of this form of tubercular kidney in which the disease reaches the organ from without, possibly from the prostate gland, the vesicle seminalis, bladder, or, more especially, a scrofulous condition that finds its way up along the course of the ureter and infects the pelvis of the kidney, the disease usually beginning in the kidney and extending upward. The urine will present signs of pyelitis proper, and blood-corpuscles may be found in the sediment. The night and day urine present very much the same condition, no change being observed as to the appearance of blood. Albumin is found present, and at times tube-casts. The urine presents a mucus-like appearance, and pus is invariably present. Hemorrhage not often present, that is, the appearance of blood is frequently absent for long intervals. Pain, located more particularly in the bladder and about the pelvis, sometimes extending up to the lumbar region, is a symptom of this condition of the kidneys. The urine is apt to be viscid, cloudy, and opaque, and the albumin present is no more than the amount of pus can account for.

Cadwaller insists that vesical pain and tenesmus may be re-

liable signs of pyonephrosis, even when nothing can be discovered on the part of the kidneys. This has not been the experience of the author in observing his own cases. I have seen very decided amounts of pus in pyonephrosis that would produce no irritation whatever of the bladder, particularly so long as the urine remains normally acid.

Osler, as an aid in the differential diagnosis of pyonephrosis and tubercular cystitis, states that the urine remains acid in renal tuberculosis unless there is extensive coexistent cystitis. The urine is likely to contain pus continuously, and granular débris, sometimes shreds of connective tissue, showing serious disintegration of the mucous membrane.

Mitchell has well said that "it is always wise to suspect tuberculosis if pyelitis or cysto-pyelitis exists without evidence of stone." Patients often do suffer from a severe and frequent desire to micturate.

In cases of tuberculosis of the kidney the temperature is the important symptom. The later condition will often rise from one to five degrees higher at night, continuing thus for several days, without our being able to account for it from any other state of the system. In all these suspected cases of scrofulous kidney it is well to look carefully over the system and see as to the evidence of past tuberculosis, or the presence of the acute condition.

Direct examination of the kidney often leads to a more positive diagnosis. It will, at times, be tender and sensitive to the touch, but not at all enlarged. There may be nodules present that, in a thin person, can be made out, located deep in the kidney.

Tubercular hydronephrosis is sometimes diagnosed by removal of the fluid and careful examination instituted for tubercular bacilli. Sometimes the kidney is so enlarged as to indicate a decided growth, and in the absence of other evident disease we have reason to be suspicious of a tubercular kidney, especially if the family tendency is in that direction, and the patient has a tubercular diathesis. Heredity is the predisposing element in most of these cases.

The urine should be examined by the best and most competent bacteriologist. This should be kept up for some few days, and if the tubercle bacilli can be detected the diagnosis is certain.

Another method, particularly in the female, is catheterization of the ureters to decide whether one or both kidneys are affected. This latter method is emphasized by Kelly, of Baltimore, and to which our attention has been so earnestly called by his very able article published in the *Bulletin of the Johns Hopkins Hospital*, vol. vii. Nos. 59-60, in which he gives us a great amount of information. This method of examining the kidney should be followed out in its most perfect manner. When once the diagnosis of tubercular kidney is made there can be but one line of treatment, *i. e.*, removal of the kidney, providing the patient's condition is such as to warrant it, and the disease is unilateral. The following case has a bearing upon this portion of my paper:

Mrs. A. L., aged forty-eight years. Family history: father died, aged seventy-six years, from some kidney trouble; mother living, aged seventy-seven years. Personal history: patient well as a child; menstruated at fourteen; frequently irregular, always accompanied with more or less pain until after birth of first child, when she suffered less and was more regular. Has had five children and three miscarriages. Menstruation ceased in November, 1892. In the summer and fall of 1889 patient suffered ill-defined pain about her back and side of abdomen, at times somewhat severe, but never amounting to renal colic; never passed blood in urine; very little evidence of bladder complication; did not feel well at times, and considered herself sick. Pain at times would start posteriorly to crest of ilium and shoot down into groin. At times noticed an enlargement in the right lumbar region, which was tender and sensitive to the touch, preventing her from lying upon right side, yet she continued about her duties as a housewife. In October, 1892, had much severe, aching pain for two months, when she was obliged to take anodynes and apply hot packs externally. From this time on the urine contained a large amount of thick, mucous deposits, but it did not give her any great distress about the

bladder or ureter in passing. Diagnosis, by exclusion, eliminated every possible form of tumor or growth, except as to the possibility of a tubercular kidney.

After having her under observation for a short time I advised her attending physician, Dr. Weckel, that an operation be done, inasmuch as there was every reason to believe the left kidney was in good condition, it presenting no sympathetic symptoms of infection. I attempted to catheterize the kidney, but was not successful.

On April 17, 1893, I did a nephrectomy, removing the kidney, suprarenal capsule, and upper third of the ureter. The patient made a good recovery, and has remained in excellent health since, hearing from her only a few weeks ago. The kidney proved to be one of caseous tuberculosis.

We must bear in mind that miliary tuberculosis is apt to be bilateral. In the scrofulous or chronic renal tuberculosis it is apt to be unilateral, and an operation upon the kidney more successful. Some few cases have recovered by incision and drainage, but it is a line of treatment not to be recommended if it is possible to do a nephrectomy. The following case illustrates the above point:

Mrs. F. L., aged forty-two years; patient of Dr. Beach, of Gloversville. Patient gave a history of ill-defined pain about the lumbar region, left side, which gradually incapacitated her for work. Was admitted to the Albany Hospital, March 18, 1892, and diagnosis of abscess of the pelvis of the kidney made. I advised an immediate operation, and on exploration, March 23, 1892, found what proved to be a tubercular condition of the kidney, but it seemed to be such a well-defined cavity that I introduced a T-drainage tube, draining and washing out with pyoktanin and various preparations of that kind. Patient was more than four months in recovering, but eventually made a good recovery and continued well for over a year, when I lost sight of the case.

In the removal of the kidney the operation of nephro-ureterectomy, as performed by Dr. Howard Kelly, of Baltimore, and reported in his paper, published in the *Bulletin of the Johns*

Hopkins Hospital, February and March, 1896, vol. vii., we have a most decided advance in the method of operating, and one that is likely to supersede other operations, where it becomes necessary to remove the entire kidney and ureter. The statement of the three cases presented in Dr. Kelly's paper is very impressive, illustrating the great difficulty in the diagnosis of tubercular kidney, even with the advantages of a cystoscopic examination, done with the expertness for which Dr. Kelly is noted in these cases, and the examination of the urine. He states tubercular bacilli were found in the first case after a patient search. In the second case bacilli, undoubtedly tubercular bacilli, were found, which had more of the characteristics of the smegma bacillus. In the third case no bacilli were found, and the diagnosis depended upon the history and physical examination. Dr. Kelly further states that by palpation in all cases the pelvic portion of the ureter was found to be enlarged and thickened, but only in the first case did it show any nodular enlargement.

There was also with each case a point of tenderness where the ureter crosses the pelvic brim. It was also shown by palpation that the ureter on the opposite side was normal. In using the renal catheter Dr. Kelly states that the separated urines showed that the abnormal constituents of the urine came entirely from the side indicated by this appearance in the bladder, and that the opposite side was sound. He states that diagnoses were made in these cases by symptoms, by palpation, by inspection, and by the analysis of the separated urines. The patients all presented a history of pain in the side, extending down the course of the ureter, accompanied by frequent and painful micturition. In the first case the renal symptoms were masked by the strangury in the bladder. He also states that these cases had intense pain in the side, two of them being accompanied by attacks of renal colic, which pointed toward the chief focus of the disease.

In summing up the operation Dr. Kelly speaks of it as follows:

"The three cases whose histories I have given exhibit three different ways of removing the kidney with its ureter:

"1. Transperitoneal, that is, through an incision through the abdominal wall, opening the peritoneal cavity. This incision involves the necessity of a second incision through the peritoneum, covering the posterior abdominal and pelvic walls, in order to get at the ureter.

"2. Retroperitoneal; the extirpation of the kidney and ureter through a long abdominal incision beginning in the loin and extending downward and forward and ending somewhere in the neighborhood of the symphysis pubis. By this method the peritoneum is detached from its cellular connection with the abdominal and pelvic walls, lifted up, and the ureter exposed without opening the peritoneal cavity.

"3. Retroperitoneal; by a short abdominal and vaginal incision. By this procedure the kidney is detached and the ureter freed from all its connections through a short incision in the loin as far forward as the base of the broad ligament. The rest of the ureter is then pulled through an opening made in the vault of the vagina, and removed down to its vesical end by continuing the vaginal incision forwards toward the neck of the bladder.

"Two of my friends, Dr. Clinton Cushing, of San Francisco, and Dr. C. P. Noble, of Philadelphia, were present when I performed the second operation. Dr. Cushing suggested removing the ureter through the vagina, and Dr. Noble suggested removing the upper part of the ureter with the kidney through the incision in the abdominal wall, and at a later date taking out the pelvic end of the ureter. This was what I tried to do in the first case, but I failed on account of the dense inflammatory tissue surrounding the lower end of the ureter.

"I look upon the three cases as evolutionary in respect to the best mode of operating, and I would prefer in the future in all cases to operate by an incision in the side, large enough to take out the kidney and easily admit a hand and forearm introduced for the purpose of detaching the ureter as far down as the vaginal

vault. I would then tie the ureter at the lowest point, and remove all that portion with the kidney above the ligature. I would complete the operation by removing the vesical end of the ureter through the vagina, with the patient in the lithotomy position."

These patients all require a general course of tonic treatment such as tends to relieve general tuberculosis.